Money supply & demand, pt. I

EC 103–02

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Motivation

Housekeeping

Required readings:

- `OpenStax, ch. 14`

Functions of money

Functions of money

Market economies **cannot** function without money.

As an alternative to a **monetary economy**, consider a **barter** economy.

- Where there is *direct exchange* of goods and services for other goods and services.

A barter system requires a "**double coincidence of wants**" for trade to take place.

- It is impossible to guarantee that all parts will be made better off after an exchange.

Money *solves* the problems that the barter system creates.

- In other words, money serves as a **means** through which all those involved in the exchange process will satisfy their needs **after** any transaction takes place.

Functions of money

Since the use of money gets rid of the "double coincidence of wants" problem, it has **three main functions**:

1. Medium of exchange;
2. Store of value;
3. Unit of account.

Starting with a **means of exchange**, money is what sellers generally accept and buyers generally use to pay for goods and services.

- Money serves as the ***intermediary*** between the buyer and the seller.

Functions of money

Money also performs the role of **storing value** (i.e., holding wealth).

- It is an ***asset*** that can be used to transport **purchasing power** from one time period to another.

There are many other stores of value besides money, but none is as **liquid** as money.

Thus, functions (1) and (2) comprehend the **liquidity property of money**.

> The **liquidity property of money** makes it a medium of exchange as well as a store of value, being portable and readily accepted, thus easily exchanged for goods and services.

In **inflationary** periods, the most affected function of money is of *storing value*.

- Why?

Functions of money

Lastly, money also serves as a **unit of account**.

- Money is a consistent way of *quoting prices*.
- It serves as the standard unit of account from sandwiches to mansions.

For instance, how can we know that a car is worth the same as the $10,000 we bought it for?

- Since this is the car's *market price*, the **only** way—in a market economy—of knowing **what something is worth** is **what was paid for it**.
- This is where the **medium of exchange** and **unit of account** functions of money meet.

Money supply

Money supply

Before our well-known **paper** money, several other items have been used throughout history as money instruments.

From *cigarettes* to *gold*, any item used as money that also has an **intrinsic value** in some *other* use is considered a **commodity money**.

Nowadays, economies use **fiat** (*aka* **token**) money.

- Meaning that our dollar bills, for instance, have **no intrinsic value**.
- However, governments have declared fiat money as **legal tender**.
    - In practice, this means that a nation's money must be accepted in *settlement of debts*.

Money supply

Money goes **beyond** dollar bills, though.

The functions of *storing value*, *holding wealth*, and *quoting prices* apply to a wider range of assets other than dollar bills.

We now turn our attention to different **measures of money**.

Beyond others that are not too important for our current purposes, we will see the main **two**:

- **M1** (*transactions* money);
- **M2** (*broad* money).

Money supply

M1 comprehends all monies that can be **directly** used for transactions.

- Including any money held **outside of banks**, traveler's **checks**, and bank (checkable) **deposits**.
- Thus, M1 includes the most **liquid** forms of money.

M2, on the other hand, includes **less liquid** assets.

- *Savings* and *time* deposits, certificates of deposits, and money market *funds*.

Money supply

`M1 in the United States`

`M2 in the United States`

Money creation

Money creation

How do *banks* **create** money?

Banks keep their books in the following way:

$$\textit{Bank Assets - Bank Liabilities} \equiv \textit{Bank's Net Worth}$$

Assets are what the bank owns that are worth something.

- Its building(s), furniture, holdings of government securities, cash in vaults, bonds, stocks,...;
- Its *deposits* with the country's Central Bank (the FED in the case of the United States);
- Most importantly, the **loans** it makes to borrowers.

Money creation

The bank's **liabilities** are its *debts*.

- The most important one being its **deposits**.
    - A bank's deposits are basically *loans* made by its clients to the bank.

Finally, the bank's **net worth** is the *difference* between its assets and liabilities.

- In other words, the difference between what it *owns* and what it *owes*.

Money creation

A simple **T-account** can help us illustrate a bank's financial position:

	Assets	Liabilities	
Reserves	20	100	Deposits
Loans	90	10	Net worth
Total	110	110	Total

Notice that a portion of this toy bank's *assets* are **reserves**.

- These include deposits that a bank has at the Central Bank *plus* its cash on hand.

Money creation

In several economies, banks are *legally* required to hold reserves at the country's Central Bank.

The percentage of deposits that a bank must keep as reserves is known as the **required reserve ratio**.

Banks **earn income** by lending money out at a higher interest rate than they pay depositors for use of their money.

Thus, these usually make loans **up to the point** where they can no longer do so due to the legal reserve requirement restrictions.

Then, a bank's **excess reserves** are the difference between its actual reserves and the legally required reserves.

$$Excess \equiv Current + Required\ Reserves$$

The money multiplier

The money multiplier

The more **deposits** a bank receives, the **higher** its *actual* reserves will be relative to its *required* reserves.

This way, an increase in bank reserves can lead to a **more than proportional** increase in the money supply.

Economists call the relationship between the final change in deposits and the change in reserves that caused this change the **money multiplier**.

> The **money multiplier** is the *multiple* by which deposits can increase for every dollar increase in reserves.

It basically tells us by how many times a loan will be "*multiplied*" as it is spent in the economy and then re-deposited in other banks.

The money multiplier

The **money multiplier** can be calculated by

$$\text{Money multiplier} = \frac{1}{\text{Required Reserve Ratio (\%)}}$$

The money multiplier

Board time.

The money multiplier

In 2020, the US FED decided to reduce banks' reserve requirement to **zero**.

`Official data`

What does this imply for the multiplier?

Next time: The demand for money